SCIENCE

FRIDAY, NOVEMBER 11, 1887.

THE ANNOUNCEMENT which has been going the rounds of the press, of the perfecting by Mr. Edison of his phonograph, certainly seems startling, and one which might be denied without arousing surprise; but it now appears as if the world were soon to be treated to another great fruit of inventive genius, and that one of the great R's may soon be displaced. Mr. Edison, in a letter to the editor of *The Engineering and Mining Journal*, has expressed in his frank and usual hearty way such utter confidence in the successful performance of all, or even more than all, that is hoped for, that we look forward to the receipt of our first phonograph with anxious curiosity. Those who remember the phonograph of ten years ago will recall that it was next to impossible to reproduce tones that were absolutely distinct; that is, sufficiently distinct to be recognized without difficulty or mistake by some person who had not heard the original utterances. To-day these difficulties have been overcome; and the sender of a message, after setting the machine in motion, need only talk into the machine with his natural and usual voice, then withdraw the phonogram, which corresponds to the old sheet of tinfoil, which could not be withdrawn, and mail to his friends in this way his verbatim utterances. These phonograms will cost but little more than an ordinary sheet of letter-paper, and will be made in various sizes to accommodate messages varying in length from eight hundred to four thousand words. On the receipt of such a phonogram, it can readily be placed in the apparatus of the receiving instrument, and it will at once speak out with distinctness and clearness equal to that of the human voice at the same rate of speed at which it was originally dictated. These phonograms will not be obliterated by the first use, but may be kept on file, ready for reproduction whenever necessary.

THE OCTOBER NUMBER of the *Journal of the Society for Psychical Research* contains this statement; "It will be remembered that the earliest experiments in thought-transferrence described in the society's Proceedings were made with some sisters of the name of Creery; and that, though stress was never laid on any trials where a chance of collusion was afforded by one or more of the sisters sharing in the 'agency,' nevertheless some results obtained under such conditions were included in the records. In a series of experiments recently made at Cambridge, two of the sisters, acting as 'agent' and 'percipient,' were detected in the use of a code of signals; and a third has confessed to a certain amount of signalling in the earlier series to which I have referred. This fact throws discredit on the results of all former trials conducted under similar conditions. How far the proved willingness to deceive can be held to affect the experiments on which we relied, where collusion was excluded, must of course depend on the degree of stringency of the precautions taken against trickery of other sorts, as to which every reader will form his own opinion." The prompt publication of this damaging discovery, and it is a very damaging one, is only another evidence of the thorough candor and fair-mindedness with which Messrs. Myers and Gurney have conducted the experiments in behalf of the society. These Creery girls, daughters of a Devonshire clergyman, and from ten to seventeen years of age when the experiments were originally tried, were among the first in whom the so-called 'telepathy' was discovered. The record of the experiments with these girls was one of the most interesting chapters in the society's early history. It is extremely mortifying, therefore, to find them tainted with fraud; and the exclamations, "I told you so!" will be numerous. Yet it does not follow that all the experiments were worthless. A searching revision of them must, however, be made, and we may rest assured that the able and untiring executive officers of the society will make it.

AN INVESTIGATION OF DREAMS.

THE American Society for Psychical Research is collecting accounts of cases where one person has had some remarkable experience, such as an exceptionally vivid and disturbing dream, or a strong waking impression amounting to a distinct hallucination, concerning another person at a distance, who was, at the time, passing through some crisis, such as death, or illness, or some other calamity. It appears that coincidences of this sort have occurred, but it may be alleged that they are due to mere *chance*. For the determination of this, it is desirable to ascertain the proportion between (*a*) the number of persons in the community who have not had any such experiences at all; (*b*) the number of persons who have had such experiences coinciding with real events; (*c*) the number of persons who have had experiences which, though similar to the foregoing in other respects, did *not* coincide with real events.

The society has therefore issued a circular requesting every one who receives it in the course of the next six months to repeat the questions given below, *verbatim*, to as many trustworthy persons as possible, from whom he does not know which answer to expect, and who have not already been interrogated by some one else, and communicate the results. The questions are so framed as to require no answer but 'yes' or 'no.' Special attention is drawn to the fact that the object of the inquiry would be defeated if replies were received only from persons who have had remarkable experiences of the kind referred to (whether coincident with real events or not); and there should be no selection whatever of persons who have had such experiences. In case of negative answers only, it will be sufficient if the collector will send (not for publication) his own name and address, with the replies which he has received.

If there are any affirmative answers, the society desire to receive also (not for publication) the name and address of any person who answers 'yes.' If the experience has been coincident with a real event, they specially request the percipient to send an account of it.

All communications should be sent to the secretary, Richard Hodgson, 5 Boylston Place, Boston, Mass., from whom additional copies of the circular may be obtained. It is of the utmost importance to obtain answers from a very large number of persons, and it is hoped that many thousands of replies will be received. The questions are as follows:—

I. Have you, within the past year, when in good health, had a dream of the death of some person known to you (about whom you were not anxious at the time), which dream you marked as an exceptionally vivid one, and of which the distressing impression lasted for at least as long as an hour after you rose in the morning?

II. Have you, within the past three years but not within the past year, when in good health, had a dream of the death of some person known to you (about whom you were not anxious at the time), which dream you marked as an exceptionally vivid one, and of which the distressing impression lasted for at least as long as an hour after you rose in the morning?

III. Have you, within the past twelve years but not within the past three years, when in good health, had a dream of the death of some person known to you (about whom you were not anxious at the time), which dream you marked as an exceptionally vivid one, and of which the distressing impression lasted for at least as long as an hour after you rose in the morning?

IV. Have you, at any time during your life but not within the past twelve years, when in good health, had a dream of the death of

some person known to you (about whom you were not anxious at the time), which dream you marked as an exceptionally vivid one, and of which the distressing impression lasted for at least an hour after you rose in the morning?

V. Have you, within the past year, when in good health, and completely awake, had a distinct impression of seeing or being touched by a human being, or of hearing a voice or sound which suggested a human presence, when no one was there?

VI. Have you, within the past three years but not within the past year, when in good health, and completely awake, had a distinct impression of seeing or being touched by a human being, or of hearing a voice or sound which suggested a human presence, when no one was there?

VII. Have you, within the past twelve years but not within the past three years, when in good health, and completely awake, had a distinct impression of seeing or being touched by a human being, or of hearing a voice or sound which suggested a human presence, when no one was there?

VIII. Have you, at any time during your life but not within the past twelve years, when in good health, and completely awake, had a distinct impression of seeing or being touched by a human being, or of hearing a voice or sound which suggested a human presence, when no one was there?

HEALTH MATTERS.

Cholera at Quarantine.

It will, we imagine, be somewhat of a surprise to our readers to learn that there have been thirty-eight cases of cholera at the quarantine islands in the port of New York since Sept. 22; and yet from reputable sources this seems to be the fact. From the report just made to the College of Physicians of Philadelphia, and published in an extra issue of the *Medical News*, we learn that eight persons sick with cholera were removed from the steamship 'Alesia,' to which *Science* referred in its issue of Oct. 14, to Swinburne Island; five of these died: subsequently twenty-seven others were stricken with the disease, of whom nine died: of the passengers of the 'Britannia,' whose arrival from Italy was recorded in *Science* of Nov. 4, three have been attacked with cholera, at least one of whom has died, — a total of thirty-eight cases and fifteen deaths. So far as we know, no new case has developed since Oct. 24.

The report to which we allude is a most important one, and one which will attract the attention and thoughtful consideration of physicians and sanitarians, not only in the United States, but throughout the civilized world. On Oct. 5, the College of Physicians of Philadelphia appointed a committee to consider the present danger of the importation of cholera into this country, and to secure concerted action among the medical societies of the land in urging upon the State and National authorities the adoption of a uniform and efficient system of quarantine for all exposed ports. This committee consisted of Drs. James C. Wilson, E. O. Shakespeare, and R. A. Cleemann. It will be remembered that Dr. Shakespeare was selected by President Cleveland to investigate cholera in Europe and India. These gentlemen investigated the quarantine stations at New York, Philadelphia, and Baltimore, and presented their report Oct. 28. The following day an extra issue of the *Medical News* of Philadelphia, one of the leading medical journals, was published with the following editorial comment: "The paramount importance to the public of preventing the importation of cholera into the United States calls for a special issue of the *Medical News*, giving in full the report of the commission appointed by the College of Physicians of Philadelphia . . . to investigate the condition of affairs in the quarantine of New York. It will be seen that the grave dangers which exist may render prompt action necessary with a view to establishing some national system of quarantine for the protection of the country."

The committee visited personally the quarantine stations at the three ports mentioned, and made a careful and thorough examination of every thing pertaining thereto. It will be impossible for us to do more than refer to their conclusion. In reference to the stations at Philadelphia and Baltimore, they say that it is evident that they fail in the most essential requisites of the necessary number of properly equipped buildings for the isolation and observation of a large number of immigrants. In regard to the station at New York, they find the buildings to be sufficiently large and numerous, and to have adequate arrangements for heating and cooking, but that they are not divided into a sufficient number of small compartments to permit the strict isolation of the immigrants into small groups. The water-closets and bath-tubs are inadequate, the pumps by which sea-water is obtained for flushing the water-closets were out of order, and the soil-pipes from the water-closets had a number of right angles in their course to the sea, thus interfering with thorough scouring. There is no provision for the general washing of clothing, and the immigrants performed this work for themselves in such proximity to the underground cisterns of water as to render it possible for this water to become infected. The use of this cistern-water for drinking had been forbidden, and other water supplied for this purpose; but there were no means of enforcing the order, and access to the cistern could be had at all times. The lack of bedsteads, chairs, tables, and proper eating utensils, added to the hardships of the immigrants and to the dangers of infection.

The committee comment on the absence of a resident medical officer, and of an adequate force of watchmen, patrolmen, and attendants. The possibility of occasional clandestine communication between the detained immigrants and their friends by means of small boats, constituted a danger to the country difficult to estimate, and against which, so far as could be learned, there were no precautions. At Swinburne Island, where the hospital is situated, there were, at the time of the committee's visit, nine cases of cholera in the wards, and they noted with surprise the absence of a resident physician. It was also a reversal of modern ideas to find male nurses in charge of female patients. The clothing of patients is sent back to Hoffman Island to be disinfected, although there is a disinfecting-chamber in connection with the hospital; and the committee were informed that the convalescents were, as soon as they were strong enough to be about, returned to Hoffman Island without having been previously bathed and disinfected.

In reference to the steamship 'Britannia,' it would appear that the committee believe that cholera appeared during the voyage from Italy, and that its existence was either not recognized by the ship's surgeon, or else concealed by the deliberate falsification of the ship's sanitary record. In either case the committee think that this has seriously increased the present danger of the ultimate introduction of cholera into the country through the port of New York. They state that the continuance of cholera among the passengers of the 'Alesia' so long after their removal to the station of observation, in itself demonstrates the inefficiency of the measures which have been adopted and enforced, and further add, that, although they have not heard of the development of the disease anywhere on the mainland, nevertheless, in view of the almost uncontrollable tendency of cholera to spread at times, and of the original insufficiency and the present faulty constitution of the police force on Hoffman Island, they feel impelled to believe that the immunity up to the present time has been owing to singular good fortune rather than to good management.

Having pointed out the defects of the quarantine stations, the committee turn their attention to the principal cause; namely, the cost of supplying these defects. Were it not for the question of money, there would have been physicians constantly in attendance at the New York station, and, consequently, better management and discipline would have been maintained; while at Philadelphia and Baltimore there would have been adequate establishments provided for the isolation and observation of large bodies of immigrants. The remedy suggested is to put quarantine into the hands of the national government. The committee recognize the difficulties in bringing this about, but at the same time they regard this as the only efficient remedy.

In reference to this report of the Philadelphia committee, we have little to say at this time. It certainly is a very serious indictment of the quarantine stations and methods of the three ports specifically mentioned, and of the other ports of entry upon the Atlantic and Gulf coasts, in reference to which the committee state, that, although they have not inspected them, there is no reason to believe that they are in any respect superior. It will not answer to say, as officials are reported in the daily press to have said, that this is an attack by a jealous city upon New York in order to divert

commerce from its port, nor are all the charges contained in the report to be met by the statement that the governor of the State of New York is responsible, by reason of having vetoed appropriations. The report is a serious reflection upon public officials in whom the public and sanitarians have placed implicit reliance, and should be met in the same official way that it has been issued. Unless it is so met, the quarantine authorities must not expect public confidence; and, whether they do or not, we fear they will not receive it. We shall be only too glad to open the columns of *Science* to them, and present their statements as fully as we have those of the committee of Philadelphia physicians.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF PHYSICAL EDUCATION. — The American Association for the Advancement of Physical Education will hold its third annual meeting at the Adelphi Academy, Brooklyn, on Nov. 25. The following programme has been announced: paper by the retiring president, Prof. Edward Hitchcock, A.M.,M.D., Amherst College; 'Physical Training in Elementary Schools in the United States' (extract from report of New Hampshire Board of Health for 1887), E. H. Fallows, Adelphi Academy; motion by C. G. Rathman, N. A. T. B., relative to physical training in elementary schools in the United States; discussion; report of work done by the N. A. T. B. the past year, H. M. Starkloff, M.D., president N. A. T. B; 'Physical Measurements, their Use to the Individual,' Edward Hitchcock, jun., M.D., Cornell University; discussion opened by W. L. Savage, A.M.,M.D., director Berkely Lyceum, New York City; general discussion; 'Military Training as an Exercise,' J. W. Seaver, M.D., Yale University; discussion opened by Gen. E. L. Molineux, Brooklyn, N.Y., and John White, Ph.D., head master Berkely School, New York City.

REMOVAL OF NEEDLES FROM THE BODY. — Dr. Littlewood describes in the *Lancet* a method which he has used successfully in seven cases for the removal of needles from the body. The part supposed to contain the needle is thoroughly rubbed over with an electro-magnet, so as to magnetize the metal, if present. A delicately balanced magnetic needle is held over the part. If the needle is present, its position can be ascertained by the attraction or repulsion of the poles of the magnetic needle. Having ascertained the presence of the needle, and rendered the part bloodless and painless, an incision is made over the needle; the electro-magnet is then inserted in the wound, and the needle felt for and withdrawn. If the needle is firmly embedded, the positive pole of a galvanic battery is placed on the surface of the body of the patient, and the negative pole in contact with the needle, which becomes loosened by electrolysis, and can then be easily removed by the electro-magnet.

ETHNOLOGY.

Were the Toltecs an Historic Nationality?

DR. BRINTON has for a long time maintained that the Toltecs were no historic nationality, but an entirely legendary people. In a lecture delivered before the American Philosophical Society on Sept. 2, he takes up the question, and ably defends his standpoint which he first expressed in 1868 in his 'Myths of the New World.' The present paper was written to criticise the statements of Charnay and others who maintain the historical character of this people. The enthusiastic Frenchman Désirée Charnay considers the Toltec civilization the basis of all Central American culture, and traces their migrations from the northern boundary of Mexico to Copan; but the reasons which he brings forth to support his theory, and which are entirely founded on the character of Central American arts, are not at all conclusive. The Mexican and Central American styles are not sufficiently studied to draw any conclusions as to what is original in each tribe, and what is borrowed from the other; and Charnay's assertion of a connection between East Asian and Central American arts warns us from accepting his arguments without a thorough criticism. Brinton's opinion is that the emigration of the Toltecs from the north, the foundation of Tula in the sixth century, and the dispersion of the Toltecs all over Central America, are entirely fabulous. He compares the facts known about Tula and the legends as told by the best authorities, and finds that Tula was nothing else than one of the stations the Aztecs occupied in their migrations. To explain the wide celebrity of the place, which extended to Guatemala and Yucatan, Brinton recurs to its etymology. As the meaning of the name, which is not of rare occurrence in Mexico, he gives 'the place of the sun,' and this, he thinks, brought it into connection with many a myth of light and of solar divinities. This process is one often occurring in the development of folk-lore. There can be no doubt that Brinton's opinion, that no immediate truth underlies the myth which makes Tula the birthplace and abode of gods, and its inhabitants the civilizers of Central America, is correct.

ANTHROPOLOGY IN THE AMERICAN AND BRITISH ASSOCIATIONS FOR THE ADVANCEMENT OF SCIENCE. — It is of interest to compare the papers read in the Section of Anthropology of these two associations. While the section of the British Association devoted much of its time to considering theoretical questions, such as the probable existence of an Archaian white race, the origin of totemism, etc., such questions were hardly touched upon at the meeting of the American Association, which devoted most of its time to listening to the reports of results obtained by explorers in the ethnological and archæological field. This may in part be due to the fact that the field of researches in America is so vast. The amount of unknown material is so large, that every year brings some new and unexpected discoveries. But there is another characteristic feature of the American Association. What little discussion of theories there was, referred principally to the discussion of classifications, — a subject which seems to have been entirely wanting among the papers of the British Association. If we consider that classifications are only a help, not an aim, of science, and that the great goal of ethnology and anthropology is to outline the early history of mankind and to work out the psychology of nations, we must concede that the work of the British Association is superior to ours. We do not mean to say that there are no vague theories held by British scientists, or that no eminent work is done by Americans; but the favorite studies of ethnologists as a whole, and as expressed in the subjects of papers presented to the English Association, seem to be of a more general and of a higher scientific character than they are here. We mention a few of the papers read at the Manchester meeting of the British Association according to the reports published in *Nature*. Mr. I. Taylor discussed the probable origin of the Aryans. He dwelled on the recent linguistic researches, which show that the primitive Aryans must have inhabited a forest-clad country in the neighborhood of the sea, covered during a prolonged winter with snow; the vegetation consisting largely of the fir, the beech, the oak, and similar trees, while the fauna comprised the bear, the fox, the hare, the deer, and the salmon. These conditions restrict it to a region north of the Alps and west of the Black Sea. The author attempted to show, both from the anthropological and the linguistic point of view, that the Aryans have evolved from a Finnic people. J. S. Stuart maintained the existence of an Archaian white stock, from which he is inclined to derive so widely different phenomena as the American and Chinese civilizations, as well as the origin of Hittites, Iberians, and Picts. C. Staniland Wake treated the problem of totemism from the point of view that the totem is the re-incarnated form of the legendary ancestor of the gens or family group allied to the totem, — a view which is undoubtedly correct in many cases. S. J. Hickson gave a few remarks on certain degenerations of design in Papuan art. It would have been more proper to speak about conventionalism in Papuan art, — a field that offers many interesting problems, and to which Dr. O. Uhle of Dresden recently made a valuable contribution in the publications of the Ethnological Museum of Dresden. Miss A. W. Buckland spoke about the custom of tattooing, which, although almost universally practised, varies so much in the mode of performing the operation; the various methods seeming to have such definite limits as to make them anthropologically valuable as showing either racial connection or some intercourse formerly existing between races long isolated. This paper belongs to a class of inquiries which have of late been carried on by a number of ethnologists, and which yield valuable results. We call to mind Prof. E. S. Morse's researches on the

release of arrows, which lead the distinguished scientist to so remarkable conclusions. The well-established fact that the non-existence of certain color-names does not prove color-blindness, was shown by Mr. W. E. A. Axon to hold true among the English gypsies. Besides these papers, reports on new explorations were not wanting. Papers on psychophysics, which we consider an important branch of anthropology, were not included in the list of papers read before the Section of Anthropology of the British Association.

MENTAL SCIENCE.

Drawing among Primitive Peoples.

THE application of the inductive method to the study of mental facts — and that, too, from its first appearance in Locke or Herbart — inevitably brought into prominence the observation of minds different from our own, and in particular of peoples less advanced than ourselves in the march of civilization. The seed thus sown has borne good fruit; and in the works of Lubbock and Tylor, of Bastian, of Steinthal and Lazarus, and many others, we have an excellent foundation for an anthropological psychology. The object of this movement is not only to record as far as possible the probable history of our early attempts at culture and the long succession of gradually outgrown customs and beliefs, but also to co-ordinate the various works of mental evolution, to arrange them in some serial order, — as Romanes does with animal evolution, — and thus help to furnish the categories for a general psychology, which will be none the less scientific because it needs to be enlivened by the tact of a humane observer.

Among the characteristics that contribute most to this end are, what have always been and still remain the two great kinds of human expression, language and handiwork, and especially art. The permanence of the latter mode of expression makes it of crucial value to the anthropologist. Dr. Richard Andree, in reviewing the art-productions of savage tribes as shown by their drawings, emphasizes the great development which this talent can attain in conjunction with a low state of psychical development. Travellers often mention the power of savages to rapidly sketch characteristic figures, and among the oldest relics of the cave-dwellers we find distinct tracings of animal forms. As in so many other respects, an analogy is present between the drawings of primitive men and of children. Figure sketching (in outline) and ornamentation are the prominent characteristics of both; while the power of landscape-sketching, as well as a sense for natural beauty, is a much later acquisition. Among the forms drawn, plants are seldom found: what is full of motion and life — the horse, etc. — first attracts the attention, and is transferred to bone, clay, or stone. At times ornamental and figure work go together, but much oftener a development of the one or other alone is possible. The Maoris and the Fiji-Islanders confine themselves to ornaments, and seldom draw a figure. Among the Australians the development of ornamentation has stopped at a certain stage, — with recurrent stereotyped forms of wedges, crosses, and 'herring-bone' patterns, — while scenes from their doings are recorded with much fidelity, and color is often used to lend reality to the design. The Bushmen excel in painting (though without perspective), and trace with great accuracy the scenes of daily life, of hunting, warring, etc. As figure-painting allows of very various development, we find different styles of conventionalism — the art of ancient Peru is a notable example — in different tribes. Other peoples — and here the Arctic tribes stand in the first rank — aim at a faithful representation here: ornamentation finds no place, and such subjects as fishing, sleighing, etc., are the usual ones. The attempts at human forms are often failures; but the drawings of their most common animals, as the reindeer, are sufficiently exact to serve as a means of zoölogical identification.

Even the humerous is found on the primitive 'canvas,' and especially among the fun-loving negro tribes. Exaggeration of small peculiarities (as in children) is the marked trait. The natives of the Loango coast carve in a spiral on elephant's tusks a whole carnival of ridiculous figures, — sailors, officers, *savants*, etc.

The material of the artist is very various. Many cut and daub their utensils; the Peruvians decorate their woven fabrics; the Australians draw on blackened bark; the Africans carve in ivory. The universal imitative bent, of which the desks and walls of a school-room often show striking evidence, appears in many curious savage 'art-galleries.' On the island of Depuch, off the north-west coast of Australia, are found scratched on the smooth rock a crowd of men, birds, fish, crabs, bugs, etc., and colored black, white, red, yellow, and (seldom) blue. This seems to have been a pastime of these fishermen for generations.

While the drawing talent is thus quite a general one, the possibility of a large development of it is limited. It usually stagnates in conventionalism, and seldem reaches the stage, as it does in the Eskimo, of being utilized as a pictographic language.

In conclusion, Dr. Andree calls attention to the fact that almost everywhere the men alone are the artists. In one case this rather anomalous phenomenon leads to curious results. Among the Papuans of New Guinea, vessels and implements of wood are quite generally decorated, while the pots made by the women are devoid of all ornamentation.

RE-ACTION AND INHIBITION TIME. — If it is arranged that a certain action is to take place at a given signal, it will be found that a quite constant time elapses between the signal and the re-action. Besides executing a motion, we can exert our will towards restraining an act; and this not always by the contraction of an antagonistic muscle, but by a direct inhibitory action of the nervous centres. Dr. Gad of Berlin has measured the time necessary to thus inhibit the action of the muscles used in mastication, and announces the important result that this time is the same as is necessary for an ordinary re-action. This is true not only under ordinary conditions, but the variations in the time by practice, by fatigue, under the influence of narcotics, etc., for the two acts, is about the same, as is shown in the following table: —

	Re-action-time.	Inhibition-time.
Before practice	0.25 sec.	0.30 sec.
After practice	0.15 "	0.14 "
With weak stimulus	0.20 "	0.17 "
With strong stimulus	0.12 "	0.11 "
After fatigue	0.18 "	0.16 "
8 minutes after taking alcohol	0.12 "	0.09 "
30 minutes after taking alcohol	0.25 "	0.20 "

In short, the mechanism of inhibition works as accurately and as delicately as that of re-action.

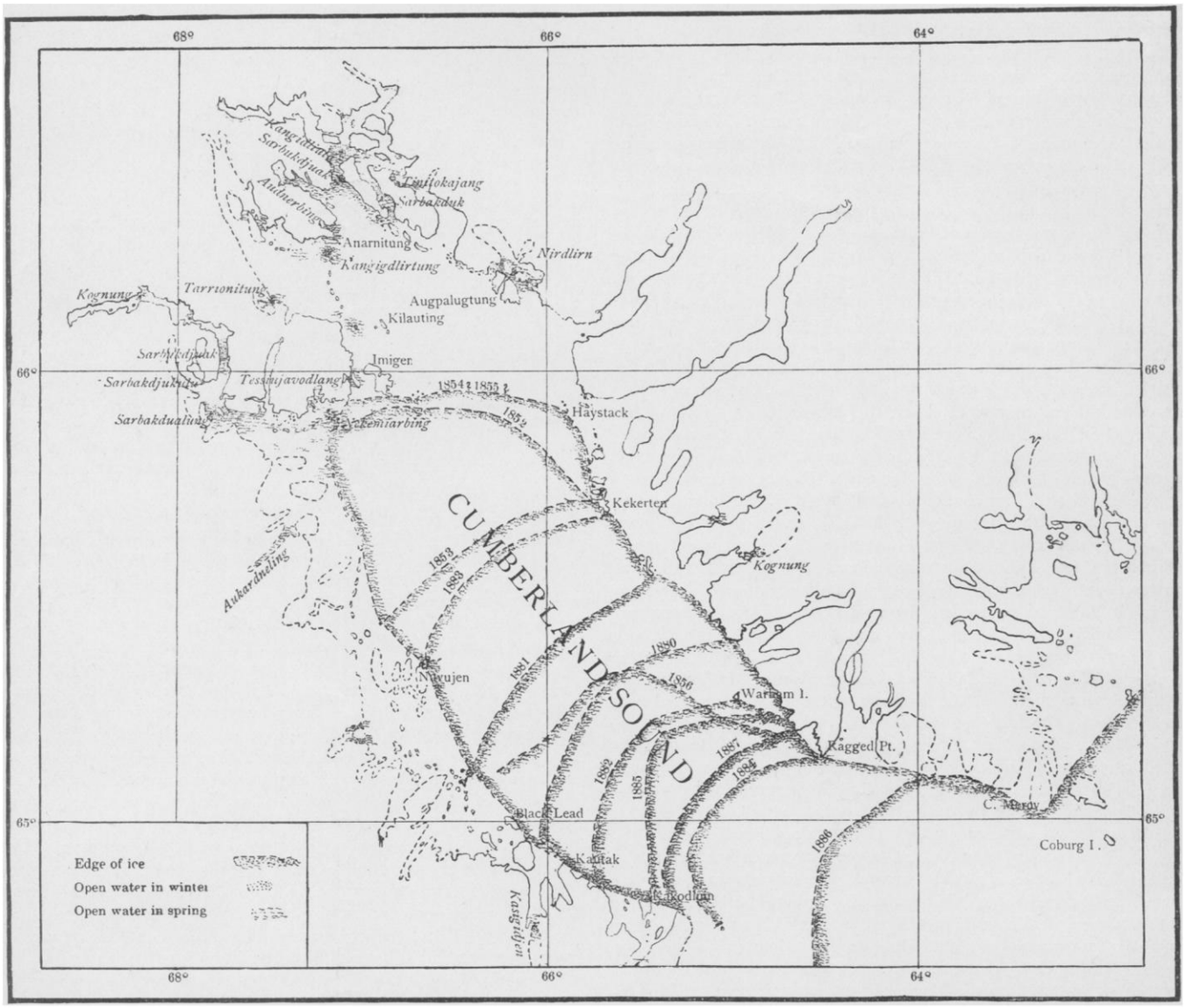
A REMARKABLE CASE OF AMNESIA. — The many strange phenomena of amnesia have been enriched by the experience of one of the ablest living psychologists, Professor Bain. Some months ago Professor Bain fell from his horse, and was unconscious for about three hours afterwards. During this time his shoulder, which had been sprained by the accident, was set without his knowledge. Upon regaining consciousness, it was found that he had lost all remembrance of what had occurred an hour before the accident, as well as of the three hours following. He was found on a different road from that which he can remember having intended to take, and so must have changed his mind. Of this he has lost all recollection; otherwise there were no mental effects. The editor of *Mind*, who tells the story, adds another case in which a gentleman, after falling from a carriage, remained unconscious for nearly four months. Upon re-awakening, not only was this interval a total blank to him, but the events of the week preceding the accident were equally lost. Important transactions which he had made during that week were forgotten. This suggests that there may be some relation between the duration of unconsciousness after the accident and the memory-blank before. At all events, the phenomena, mysterious as they are, deserve to be recorded. The authenticity and careful analysis of the above cases add to their value.

EXPLORATION AND TRAVEL.

Notes from the Arctic.

MR. WILLIAM DÜVEL, who returned a few days ago from Cumberland Sound on board the New London schooner 'Eira,' gives us some interesting information on the events in Cumberland Sound during the last years. The whalers, who had been unsuccessful for a great number of years, have been more fortunate since 1885, while the catch of the Davis Strait fishery shows a sudden falling-off. In 1884, when ten vessels were fishing in Lancaster Sound, the catch aggregated some eighty whales, but in the following years not more than ten or twelve were caught by the whole fleet. In 1884, the pack-ice was remarkably loose, and the first ship entered Cumberland Sound as early as the middle of July. The floe, however, which was attached to the land, lasted until the 5th of August, a date unprecedented in Cumberland Sound. This corresponds to the character of the land-ice in Davis Strait, which, as was formerly reported by Captain Spicer, did not break up in three subsequent summers, from 1884 to 1886. In 1885 the land-floe in Cumberland Sound extended very far south, as may be seen on the accompanying sketch-map. In 1886 its position was a little farther north, while last winter it extended again to the entrance of the Gulf. This fact is very remarkable, as in many former years the head of the open water reached up to Kekerten, and even as far as Haystack. The lowest temperature of last winter was —46° F. The snowfall was very scanty, the ice being hardly covered with any snow. As, in addition to this, the ice was very smooth, travelling in winter was easy. In February, however, the much-dreaded dog-disease made its appearance, and swept away the dogs of the natives. In Black Lead, among a party of thirty-three natives, only nine dogs remained. In the spring of 1886 the same disease made its first appearance in the settlements of Davis Strait, where it was unknown up to that time.

Last summer the ice of Cumberland Sound broke up on the 6th of July. As the whaling in the Sound has become more profitable, a greater number of vessels frequent the Sound, and several permanent stations are established. There is a Scottish station in Kekerten, while American whalers have stations on Black Lead, in Nugumiut, and in Hudson Strait. The sanitary condition of the natives was very good. In Cumberland Sound five deaths occurred during the last year, while three children were born in a single settlement. In the fall all natives belonging to the tribe inhabiting the west coast of Cumberland Sound gathered in Black Lead, and celebrated the great annual festival which is known to all the tribes of northern Labrador and Baffin Land, and in which masked men, who represent certain spirits, make their appearance. Early in spring south-westerly winds carried the heavy pack-ice of Davis Strait into the Sound, and kept it there for a number of weeks.



ICE-CHART OF CUMBERLAND SOUND. Compiled by Dr. F. Boas.

While in 1883 and 1884 a great number of flat icebergs, most of which were the scattered remains of one enormous berg, filled the Sound and the neighboring parts of Davis Strait, this form was not observed during the last years; all bergs, with one single exception, being very high and pointed.

The ice-chart of Cumberland Sound, which accompanies these notes, has been compiled from observations made by F. Boas in the winter of 1883–84, and from reports of American and Scottish whalers. The edge of the floe as indicated on the map shows the greatest extent of the ice in each year, which is attained about the end of February. Besides this, the water-holes, which are kept open throughout the winter by swift-running tides, are indicated on the map, and so are the places where the ice is worn through by the currents in March and April.

BRITISH COLUMBIA. — Dr. G. M. Dawson has kindly sent us a more detailed account of his work in British Columbia. Leaving Victoria early in May, the expedition reached Fort Wrangel, from which point they proceeded up the Stikine River to Cassian. The expedition consisted of two branches, Dr. Dawson leading the geological department, while Mr. W. Ogilvie made an instrumental survey of the country, on behalf of the Dominion Land Office. His surveys extend from the seacoast by way of the Lewis River, up the Yukon to the 141st meridian, which constitutes the eastern boundary of Alaska, and his measurements will serve as a basis for further work in the district. The object of Dr. Dawson's researches was a thorough exploration of the tributaries of the upper Yukon. Messrs. R. G. McConnell and James McEvoy were his special assistants. His party proceeded up the Stikine River as far as Dease Lake, where they built three boats. As soon as the ice broke up and left the lake, which was on the 18th of June, later than it ever has been known, they went down the Dease River and into the forks of the Dease and Liard Rivers. Here Mr. McConnell separated from the rest of the party for the purpose of descending and surveying the Liard and the Mackenzie Rivers. Dawson went up the Liard and Frances Rivers to Francis Lake, which drains into the Liard, and not into the Pelly River, as shown in most maps of that country. From Francis Lake, the party crossed a difficult portage of about fifty miles to the Pelly River. From here Dawson sent back the five Indians who had accompanied him from the coast, and then proceeded down the Pelly River, accompanied by Mr. McEvoy and Messrs. Lewis and Johnston of Victoria, in a small canvas boat which they had built on reaching Pelly River. At the confluence of the Pelly and Lewis Rivers, Mr. Ogilvie and his party were met. After whipsawing the lumber and building another boat for the purpose, the Dawson party ascended the Lewis River, which Mr. Ogilvie had already surveyed instrumentally. A geological survey of the country along the Lewis River was made. Then the party crossed the Chilcat portage to the head of Lynn Canal, and came by canoe to Juneau, where, after waiting for a few days, the steamer 'Ancon' was taken for Victoria. Mr. Ogilvie, in separating from the rest of the party, continued down the Yukon River, prosecuting his survey. He intends wintering on that river, and resuming his work in the spring, continuing it over to the Mackenzie River. He will return next fall to Winnipeg by way of that stream and the Hudson Bay Company's route to Carlton on the Saskatchewan. Mr. McConnell will probably winter at Fort Simpson, on the Mackenzie River, and continue his explorations from that point next summer.

BOOK-REVIEWS.

Our Heredity from God, consisting of Lectures on Evolution. By E. P. POWELL. New York, Appleton. 12°.

WE have not yet recovered from the re-adjustment of the views of life brought about by the new knowledge which the movement of which Darwin is the centre has accumulated. From the very first, the notion of evolution was most strongly opposed, because it was antagonistic to certain widely spread but in no way verified beliefs. As the facts in favor of a derivative theory became more complete and the theory more invincible, a shifting of the 'theologist's' position took place. Some held that evolution simply described a method, but in no way removed the necessity of an anterior cause; others attempted a twisted and allegorical interpretation of the authoritative beliefs so as to minimize the antagonism between them and the doctrines of evolution; but in every direction, and without regard to the final outcome, evolution has introduced into ethical discussion a healthy ferment, the fruits of which the next generation will appreciate even more than the 'liberals' of this. The variability of moral codes and their close interdependence with the environment and thought-habits of different peoples have been emphasized; and the too dogmatically asserted connection between moral actions and religious rites and beliefs has been broken through. That among the products of this violent fermentation should be found much that is analogous to waste-matter is not striking. Truth-loving disciples of science do not hesitate to admit that some of their over-ardent brethren have overstepped the lines of strict validity in claiming for evolution the solution of many of the vexed world-problems of mankind. The very fact that this aggressive kind of writing has been taken up by the lower ranks of evolutionists, while its leaders have rather acted upon a policy of reserve and awaited developments, makes it easy to admit that one does not always open a book treating the moral aspects of evolution with an anticipation of pleasure or instruction. Mr. Powell's book is both deeply interesting and scientifically valuable.

'Our Heredity from God' is a poor title; not only because the author uses the term 'God' in an unusual sense, but because the book is really a study of evolution with special reference to its moral and religious bearings. Mr. Powell avows himself a disbeliever in any personal deity, and is among that ever-increasing body of thinkers who draw their enthusiasm and inspiration from a contemplation of the vastly suggestive generalizations of science, and the deep significance of a natural morality. The author has not inherited this position, but has worked his way to it through a period of traditional sectarianism; and this leaves its mark in the many references to the biblical cosmogony. It may well be questioned whether it is still worth while antagonizing this biblical account of genesis as though it posed as a scientific explanation (which its truest admirers never claimed). With this exception, Mr. Powell is content to let the facts speak for themselves, simply placing them in such a light that their ethical import may be reflected, and adding to the exposition a depth of natural feeling that leads to an admiration of the man. Science is certainly not as cold as she is often pictured to be. It is impossible to give even in outline a sketch of the long and accumulative argument by which the moral beauty and religious satisfaction of the evolutionary aspect of nature is unfolded in Mr. Powell's mind. All that can be done is to cite a few sentences which shall at the same time illustrate the attractive style and happy suggestiveness that make the pages readable. What Mr. Powell means by the title of his book may perhaps be gathered from these words: "The hypothesis of evolution opens our eyes to the magnificent panorama of an eternal unfolding of relations of life, full of purposive love, which rising from the vast unfathomableness of the sentient universe, at last lifts us as conscious beings near to the heart of the Supreme All in All; and with Him, and in Him, and by Him, bid us consciously to live, and move, and have our being. This I call our heredity from God. To trace our descent from animal progenitors is but a fraction of the problem: the longer sweep of vision beholds an ancestry that embraces all life and all purposive being."

The author holds that the widest gap is not between man and the animals, but between savage and civilized man: he adores civilization as man's handiwork, and regards as most immoral all that hinders its progress. Many of the notions associated with religious doctrines are thus condemned and fearlessly denounced. The view, however, is broad enough to see in many such beliefs stages of ethical development. They are denounced, not because they never formed an advance step in moral evolution, but because they cease to do so any longer. Contrasting, thus, man's present with his past history, — still epitomized in the early stages of each one of us, — Mr. Powell sees a glorious future, when the development of ethical notions, now barely dreamt of, will be wide-spread, in accordance with the sound ethical nature of the universe.

Among the sentences worth repeating for their own sake are the following: "Suspension of judgment is another faculty that is steadily becoming the common property of mankind. It is a growing power, under civilization, to hold the mind in hand, to restrain it by

ascertained laws." "All religions, all philosophies, all parties, have sought to establish an eternal camp at some mile-stone of progress, but all have failed. It is difficult to grasp the full force of this idea — the individual. . . . Men of lower races are much of one pattern. Civilization is an individualizing process; so in turn men of intense character have done most of the propelling that has constituted civilization." "The first need of a plant is precisely the first need of an animal; and that of man is the same. This common need of all life is to find out facts, — facts about what is not itself, — and then to adapt itself to what it finds out." "Nowhere in nature has there been as much parasitic life as among human beings. It takes a large degree of wit to live idly, and off your neighbor's industry. But some vegetables learned to do this before man did it; and many animals have done the same. The result has been degeneration, loss of structure, loss of faculty, and, as a rule, final helplessness and degeneration of the whole being." "But it is not simply at the height of national existence that this impulse for self-preservation responds to the mimicry of lower life. You will observe its operation in our social customs and common propensities; for it is a fact that not any thing is more dreaded or shunned by average human beings than originality, — that is, unlikeness to others. It has always been dangerous. It is even yet likely to secure for its possessor a great deal of annoyance." "Strange views break out all over the globe by apparent spontaneity. . . . Darwin, and Wallace, and Haeckel, without intercommunication, propounded simultaneously the hypothesis of evolution. It is as when three mountain-tops of equal height catch the morning sunbeam at the same moment."

Sixth Annual Report of the United States Geological Survey (1884–85). J. W. POWELL, director. Washington, Government. 4°.

ALTHOUGH on account of the tardy appearance of this volume, for which the management of the survey does not appear to be responsible, the administrative portions have lost some of their freshness and interest, the work as a whole fully sustains the splendid reputation of its predecessors. These annual reports are admirably designed, when promptly issued, to place the Geological Survey *en rapport* with the general public: for they consist of, first, the report of the director, which is devoted to the organization, new features, and general operations of the survey; second, the short administrative reports of the chiefs of divisions, showing in greater detail the progress made in every department of the survey during the year; and third, and most important of all, the scientific papers or monographs completed during the year. The monographs are also published separately, and appear in the annual report *in extenso* or in abstract form, as convenience or their general interest may demand. The bulletins of the survey are shorter but more technical papers, which are not represented in the annual report; the object being to include in this volume only the results of most general interest, with the view of making it a somewhat popular account of the doings of the survey, that it may be widely read by the intelligent people of the country.

The report is accompanied by the following monographs: 'Mount Taylor and the Zuni Plateau,' by Capt. C. E. Dutton; 'Driftless Area of the Upper Mississippi Valley,' by T. C. Chamberlin and R. D. Salisbury; 'The Quantitative Determination of Silver by Means of the Microscope,' by J. S. Curtis; 'Seacoast Swamps of the Eastern United States,' by Prof. N. S. Shaler; 'Synopsis of the Flora of the Laramie Group,' by Prof L. F. Ward.

The last-named paper has already been noticed in the pages of *Science*, and several of the others are of such great importance and general interest as to demand fuller comment than it is possible to accord them in this preliminary notice.

The force of the survey is now, and must be for several years to come, largely devoted to the construction of a topographic map of the United States; and the director's report begins with the plan and progress of this work, and illustrations of the lettering and conventional signs to be used on the map. The scale of the map is approximately one mile, two, or four miles to the inch, according to the character and prospective needs of the country; the map is constructed in contours, with vertical intervals of 10, 20, 50, 100, and 200 feet, varying with the scale of the map and the magnitude of relief features; and, finally, the map is to be engraved in sheets, of which the unit is to be the square degree, i.e., one degree of latitude and one of longitude. An area of 57,508 square miles was surveyed in the year 1884–85, at an average cost of about three dollars per square mile.

The organization of the survey is more fully explained here than in any of the previous reports. Besides the large topographic corps under Mr. Henry Gannett, it includes the following divisions, each chief or head of division being provided with a strong corps of assistants: 1. Glacial geology, in charge of Prof. T. C. Chamberlin; 2. Volcanic geology, in charge of Capt. Clarence E. Dutton; 3. Archæan geology of the Appalachian region, including all the metamorphic or crystalline strata, of whatever age, extending from northern New England to Georgia, in charge of Prof. Raphael Pumpelly; 4. Archæan geology of the Lake Superior region, in charge of Prof. Roland D. Irving (it is not proposed at present to undertake the study of the crystalline schists of the Rocky Mountain region); 5. Areal, structural, and historical geology of the Appalachian region, in charge of Mr. G. K. Gilbert; 6. A thorough topographic and geologic survey of the Yellowstone National Park is in the charge of Mr. Arnold Hague. When the survey is completed, Mr. Hague's field will be extended so as to include a large part of the Rocky Mountain region. The general geologic work relating to the great areas of fossiliferous formations is very imperfectly and incompletely organized, and this must continue to be the case until the topographic survey approaches completion.

The paleontological work of the survey is carried on in five laboratories, as follows: vertebrate fossils, in charge of Prof. O. C. Marsh; invertebrate fossils of quaternary age, in charge of Mr. William H. Dall; invertebrate fossils of cenozoic and mesozoic age, in charge of Dr. C. A. White; invertebrate fossils of paleozoic age, in charge of Mr. C. D. Walcott; and vegetable fossils, in charge of Mr. Lester F. Ward.

The chemical laboratory, with a large corps of chemists, is in charge of Prof. F. W. Clarke. There is a physical laboratory in the survey, with a small corps of men engaged in physical researches of prime importance in geology. A large corps of lithologists is engaged in the microscopic study of rocks. Besides the division of mining statistics, economic geology is represented by two parties, in charge of Mr. George F. Becker and Mr. S. F. Emmons, engaged in studying various mining districts in the West.

The survey also comprises a division, in charge of Mr. W. H. Holmes, organized for the purpose of preparing illustrations for paleontologic and geologic reports. Illustrations will not hereafter be used for embellishment, and, so far as possible, will be prepared by relief methods, and held permanently for the use of the public at large in scientific periodicals, text-books, etc. The large geologic library and the bibliographic work of the survey are in charge of Mr. C. C. Darwin.

The remaining topics discussed by the director are the publications, appointments, and finances of the survey, and the relations of the Government and State surveys.

Elementary Text-Book of Physics. By Profs. W. A. ANTHONY and C. F. BRACKETT. 3d ed. New York, Wiley. 8°.

THIS is the first appearance, in a complete form, of a long-expected text-book from two well-known American physicists. It is designed to furnish what is necessary and sufficient for that part of a well-adjusted college course which is devoted to the study of physics, and it is the only college text-book of that science which has appeared in this country for several years, aside from revisions and new editions of old works.

Many institutions have hitherto made use of English books, or of translations from the French which have come to us through English hands. This volume is offered as a substitute for such works, and it is little enough to say that it will be found in general to be a very acceptable one. In some respects the book is almost unique. When compared with those largely in use at the present time, it illustrates in a very striking manner the great progress in college instruction in physics during the past decade.

In its plan there is a distinct recognition of the competent instructor with a well-stocked cabinet at his command. Pictorial representations of apparatus are entirely wanting, and the illustra-

tions are only such simple diagrams as are required to elucidate the text. Besides being an advantage in other respects, this plan sets free a vast amount of space which can be utilized in the more thorough presentation of the principles of the science. For illustrations of these principles, by experiment or from facts drawn from observation, the instructor is held responsible, as he is also for their practical application.

In adopting this plan, the authors have unquestionably made a decided advance. Although the treatment is mathematical wherever desirable, it is assumed that the student has no knowledge of the differential and integral calculus. In several instances the method of limits has been used, however, and students who are familiar with the calculus will have no difficulty in its application. The subject is treated in the usual five grand divisions, mechanics, heat, magnetism and electricity, sound, and light.

Many physicists will not be able to agree entirely with the authors in some of their fundamental definitions and statements in the chapters upon mechanics. A close examination of these reveals several inconsistencies, into which they appear to have been led by the adoption of certain time-honored definitions and terms. Some of these questions have received a good deal of attention during the past few years, in the columns of this journal and elsewhere, and probably the disputants are no more nearly in agreement than they were in the beginning; but it seems tolerably certain that even the average student will experience a certain turbidity of mind when he places the definition of 'momentum' (viz., "the *momentum* of a body is its quantity of motion") and that of 'motion' (viz., "the change in position of a material particle is called its *motion*") a very little nearer together than they are now found on the pages of the book. The first sentence of the introduction, "Every thing which can affect our senses we call *matter*," has a ring of materialism about it which one would hardly expect from at least one of the two famous institutions of learning from which the book comes.

If these and other similar statements are admitted to be defects, they are of minor importance, and do not materially detract from the general excellence of the treatise. It is to be greatly regretted, however, that the publisher has not done his part as well as the authors have done theirs. In mechanical execution the book is substantial, but very far from attractive in its appearance.

Industrial Peace. By L. L. F. R. PRICE. New York, Macmillan. 8°.

THOSE who have given attention to the treatment of the labor-question in England have heard of Arnold Toynbee, the young Oxford graduate who founded an institution in the eastern part of London for the purpose of bringing young men of education into contact with the ignorant poor. After the death of Toynbee at an early age, a memorial fund was raised in his honor, and devoted to the work of spreading information by lectures and publications on the subjects in which he was interested; and the volume before us is the first to be issued by the trustees of that fund. The greater part of the work was first read before the Statistical Society of London, and was published in the journal of that society for March, 1887.

Mr. Price opens his work by remarking, what is sometimes lost sight of by enthusiastic reformers, that "there is not, nor indeed is it probable that there can be, any single panacea for social ills. . . . So diversified are the details of even contemporaneous industrial society, that any scheme which professes to cure all economic maladies by an uniform unalterable method of treatment may almost be said to carry with it its own condemnation" (p. 1). Some persons, he remarks, think that co-operation is destined to remove all industrial difficulties; but upon this point he thinks that experience is not encouraging. Co-operative distribution has prospered in England to a surprising extent; but in co-operative production there were in 1884 only £800,000 of capital employed, and only 6,300 men. He believes, therefore, that whatever advance may be made in co-operation and profit-sharing, the old relation of wage-payer and wage-receiver will still continue; and the object of his essay is to inquire by what means this relation can be made more harmonious.

The means that he relies on are the creation of boards of conciliation and arbitration, and the establishment of sliding scales of wages. As an example of the former class, he describes the formation and working of the board of conciliation organized in 1869 in the iron trade of the north of England, which he considers an excellent test of the system, since the fluctuations of wages in the iron trade are greater than in most others, and also because before the board was organized the relations between workmen and employers was very unfriendly. In spite of these difficulties, however, the method of conciliation has proved a great success. The machinery consists of a board comprising representatives of both sides and a standing committee appointed by the board. All questions are first investigated by the committee, and, if they cannot agree, the matter is laid before the board; and, if an agreement is not reached there, an arbitrator is called in to render a decision. The system is similar to the *conseils de prud'hommes* that exist in France and Belgium; but Mr. Price objects to these on account of their legal character, which is contrary to the traditions of English, and, we may add, of American life. He examines at length the working of the boards of conciliation, and then proceeds to consider the method of sliding scales, by which wages are made to vary with the price of the product. The establishment and maintenance of such scales have been attended with considerable difficulty, owing to disagreements as to what standard of prices and wages should be taken as a basis; but nevertheless they have proved successful in many English collieries, and are still in force there. The special advantages of these scales, in Mr. Price's opinion, are their elasticity and their automatic action; but he does not fail to point out at considerable length the difficulties attending the working both of the sliding scales and of the boards of conciliation. The chief of these are, "the possibility that the decision might fail to secure loyal adherence, the contentiousness connected with the preparation and discussion of elaborate arguments, and the difficulty of determining upon a satisfactory basis and of ascertaining accurate data" (p. 89).

Such is a brief analysis of the methods of 'industrial peace' that have been tried with no little success in England; and we would earnestly recommend a study of them to the leaders of our American trade-unions and to the employers with whom they are perpetually contending. It is the duty as well as the interest of both parties to maintain peace, and any methods that have been successfully employed for this purpose ought to be carefully considered by them, and, if possible, put into practice. They will not, of course, solve all industrial problems; but the substitution of peaceful methods for contentious ones would of itself be a great gain, and would pave the way for further improvements in the future.

Elementary Practical Physics. By B. STEWART and W. W. H. GEE. Vol. II. Electricity and Magnetism. New York, Macmillan. 16°.

ALL who are familiar with the contents of the first volume of this work will extend a hearty welcome to the second. Every teacher of physics by laboratory methods has felt the need of a good handbook or guide, which, in the hands of the student, would afford some relief from the labor of giving individual instruction in the details of manipulation, which, when the number of students is large, becomes simply enormous.

Since the publication of Pickering's 'Physical Manipulations' fifteen years ago, the pioneer in this field, a number of attempts have been made to supply the want. It is safe to say that none have been more successful in producing a book at once satisfactory in plan and material than Professors Stewart and Gee, in this series, the second volume of which has now appeared.

In its general character it resembles the first volume. One of the leading features of the series, very prominent in this volume, is the fulness of detail concerning all operations, the making of every experiment, and the nature and construction of every piece of apparatus used. Nearly all of the instruments described are such as were constructed in the laboratory of the authors: they are simple in design, and instructions for their reproduction are so clear that even the unskilful can hardly fail. The amateur instrument-maker is also greatly aided by the numerous diagrams and cuts illustrating methods of construction.

The value of this feature of the work can hardly be overestimated, for it is a fact that many good teachers have little inventive

or mechanical skill. Besides, it will generally be admitted that the construction of the simpler apparatus by the student himself is a most valuable and useful exercise, giving him a firm and lasting hold upon fundamental principles which he can attain in no other way. But this attention to detail does not stop with the instrument itself. All of various steps to be gone over in its use, its proper adjustments, the errors to be looked out for, etc., are carefully considered; and in nearly every instance a numerical example is provided, generally taken from real laboratory note-books, and the solution and reduction are gone through with.

In short, in this respect, as many others, the book comes as near taking the place of the living instructor as can well be imagined. It must not be understood that the book is for the beginner in the study of electricity. It must at least be taken in connection with, and better after, a course in some elementary text-book on the subject, and, in addition, may go along with a course of lectures upon fundamental theories. The recognition of this fact is shown in the plan of the book itself, in which, in the first three chapters, the student is introduced to the leading principles of the science, its nomenclature, units of measure, etc., that the less elementary chapters which follow may offer less difficulty.

The chapter on resistance measurement is naturally full and complete, nearly all important and useful methods being given. A full discussion of the tangent galvanometer is given, together with the methods of determining its constants. Related to this is the determination of the magnetic elements, and a good deal of space is devoted to a very complete description of the Kew magnetometer: its use is described, and a series of observations is completely worked out. Other parts of the work are equally worthy of commendation, especially the series of appendices at the end, containing among other things a number of valuable hints as to the manipulation of material used in the construction of apparatus.

Nearly all of the formulas used in the reduction of observations are derived from elementary propositions, but the mathematical treatment of the subject is elementary, and well suited to the character of the work. In addition to its adaptability to class-room work, the book can be highly recommended to private students of electricity and magnetism.

Introduction to a Historical Geography of the British Colonies By C. P. LUCAS. Oxford, Clarendon Pr. 12°.

THIS little book is the first instalment of a larger work, to be published in parts, and dealing separately with the various dependencies of the British Empire. It gives not only a brief history of the founding of the British colonies, but treats of colonization generally, ancient and modern, and gives some chapters to what may be called the philosophy of colonization. Mr. Lucas defines a colony as a body of persons who have left their native country and permanently settled in another, and who in their new home form the bulk of the inhabitants. He then proceeds to consider the motives of colonization, the chief of which he finds to be these four: "love of enterprise, desire of wealth, social or political discontent, and religion." He does not attribute so exclusive an influence to over-population in the mother-country as some writers do, but thinks that the other motives have in many cases been more important than this. He gives a brief but interesting account of the influence of religion in the founding of colonies and the conquest of dependencies, and also of the effects of climate and race. A colonizing race should be not only enterprising and inclined to emigrate, but also endowed with an aptitude for commerce, and especially for law and government. Of these characteristics the last named is the most important: "Colonizing on any large scale must imply dealing with subject races, and the past has shown, that, in spite of other defects, the people which can govern will in the end prevail" (p. 27).

The brief history of colonization, ancient and modern, which the book contains, and the special account of the English colonies with which it closes, contain a large amount of information in a small compass, and, though treating of matters that are familiar to most readers of history, will be useful for reference. If the projected historical geography of England's colonies is carried out as well as it is begun, it will prove a valuable addition to historical literature.

Electricity for Public Schools and Colleges. By W. LARDEN. London, Longmans, Green, & Co. 12°.

THE ceaseless activity in all matters pertaining to electricity is shown in the continued appearance of books relating to the subject, in all parts of the world and in all languages.

This book is intended, as its title implies, to serve as a text-book for high-class public schools, and for colleges in which a thorough training in the fundamental principles of electricity and magnetism is furnished, in the development of which the instructor is restricted to elementary mathematics.

Few institutions of learning in this country can offer to their students more than this, and, in fact, not very many have found it possible to make use of a separate treatise upon the subject, except, of course, in the way of special elective courses.

Of the several books containing an elementary treatment of electricity and magnetism which have appeared within the last ten or fifteen years, this by Larden has the advantage of being one of the most recent, and in breadth of treatment, and thoroughness of execution, one of the best.

Only elementary mathematics is made use of, and it is therefore necessary occasionally to state a proposition on authority. Frequent references are given, however, to treatises in which such propositions will be found fully discussed. In some instances where elementary demonstrations are presented, the author has not selected the easiest and most simple. An illustration of this statement is to be found in his proof of the condition under which a battery gives a maximum current. Some of his discussions are also open to the objection of an excessive conciseness and brevity of statement, thus presenting difficulties which the average student of the class for which the book is intended will have difficulty in overcoming. The diagrammatic illustrations have been drawn especially for the work, and are generally very clear. A number of cuts of complete and well-known forms of apparatus are also furnished.

Among the commendable features of the book may be mentioned a very full discussion of induction machines (electro-static), including the Voss machine, the Holtz machine, and others, the operation of which is often very perplexing to students.

The author is not fortunate in his chapter on atmospheric electricity, and especially where he attempts to account for the varying potential of the atmosphere.

The treatment of electric measurements is tolerably full, sufficiently so for a book of this kind, in which one ought not to expect to find all of the now nearly innumerable methods and devices. The chapter on Joule's law and the conservation of energy is especially complete, although not long; and other chapters, on electro-dynamic induction, the dynamo, induction coils, etc., will be found quite satisfactory. Many teachers and students of the science will welcome the book, and find it useful in their work.

The Science of Politics. By WALTER THOMAS MILLS. New York, Funk & Wagnalls. 12°.

IN taking up a book with the above title, we naturally expect to find it treating of the duties and functions of the State, or of its organization or its history; but these topics are scarcely touched upon in the work before us. The author himself states his subject to be the duties of citizenship and the means of performing them; but he confines himself mostly to the treatment of political parties. Mr. Mills, as he tells us on his titlepage, is a journalist; and the influence of his profession is a little too plainly visible in this work, the style showing some of that offhand infallibility which many journalists affect. As regards matter, the book is not specially profound or original, yet it nevertheless contains much that is good. The author has in the main very correct ideas as to the nature and functions of parties and the rights and duties of the citizen with regard to them. He sees clearly that a party without principles is worthless, and that the fact that a party has done well in the past is no guaranty that it will always do well in the future. He vigorously maintains the right to bolt a bad nomination, and the right and duty of leaving an old party and joining a new one in case the old one proves recreant to its trust. Such views as these are not yet so widely accepted in this country as they ought to be; and, if this book should be read by the right persons, it can hardly fail to

have a beneficial influence. Mr. Mills sees, as most of us do, the evils attendant on caucuses and on party management generally, but he does not suggest any thing new in the way of remedy. He has also some good remarks on the folly of mere office-seeking and the nobleness of disinterested statesmanship. We are sorry to have to add that the typography of the book is very bad indeed. Such misspellings as 'monopilies,' 'forsee,' 'weich' for 'which,' and 'ptofit' for 'profit,' are frequent. On p. 159 there are three words misspelled; and on p. 73 is the following sentence: "A party as a party cannot refuse to meet an issue *squarly* at the ballot box, and then as a party *squarly* meet it anywhere else." Surely American typography can do better than that.

Grundriss der Psychologie. Von Dr. F. WOLLNY. Leipzig, Thomas. 8°.

IT is difficult to classify this pamphlet. It is not an elementary text-book, because it lacks all system, and treats special topics. It is not a technical contribution, for it is full of commonplaces, and has no definite end in view. Perhaps it is best to regard it as an expression of the author's interests, and as such it has little interest. The author declares his atheistic tendencies, and introduces much not very relevant ethical matter. After discussing in a very unsystematic and eclectic manner the elementary mental powers, — sensation, will, perception, memory, — both separately and in combined action, he adds a few short chapters on sleep and dreams, on insanity, on animal mind, and on alleged higher psychic powers. About the only noteworthy passages are to be found in the preface and in the appendix. The former announces that the author intends to keep psychology and physiology distinct, and has no sympathy with tedious and meaningless psychophysical experiments. As a matter of fact, the topics treated often demand a physiological treatment, and many of the chapters begin with the statement of such a fact. Instead of taking it from a physiological text-book, the author records it as his own experience. It is difficult to take his objections seriously. The appendix contains a great 'discovery.' The human body is susceptible to magnetic influence. Furthermore, if one person in the neighborhood of a magnet concentrates his attention upon another, a subtle connection between the two is made, and one can read the thoughts of the other without sensory transfer. To this so-called 'fact' are added a host of fanciful notions with much mysticism. It is queer in what various forms these unscientific notions arise. Finally, the book is written in orthodox German style, — ponderous, 'baggaged' sentences and involved constructions.

Italian Grammar. By C. H. GRANDGENT. Boston, Heath. 12°.

IN this volume the author, who is tutor in modern languages in Harvard University, has attempted, and very successfully we think, to put into convenient form and small compass sufficient of the grammar of the Italian language to meet the requirements of the ordinary student. The book, though representing Italian as at present spoken and written, gives as many obsolete forms as may be necessary for a student of the Italian classics. It is prepared specially for use in colleges, but it will prove serviceable to any student familiar with English grammar.

NOTES AND NEWS.

A PARTY of forty engineers and their assistants, about a hundred and fifty in all, will leave this city about the end of this month for Nicaragua, to locate the exact route of the inter-oceanic canal, and to obtain data from which to make accurate estimates as to the cost of the work. The expedition will be in charge of Engineer Perry, and will be joined a few weeks later by Chief-Engineer Menocal.

— A recent public test of the consolidated railway telegraph system of train-telegraphy, made on the Lehigh Valley Railroad, gave very satisfactory results. On a train moving sixty miles an hour, messages were sent and received to and from other trains on the road, and communication was had with this city and with different stations on the line.

— We have received from the Clarendon Press the first number of *Annals of Botany*, edited by Isaac Bayley Balfour, Sydney Howard Vines, and William Gilson Farlow, assisted by other botanists. The contents are, 'On Some Points in the Histology and Physiology of the Fruits and Seeds of *Rhamnus*,' by H. Marshall Ward; 'On the Structure of the Mucilage-secreting Cells of *Blechnum occidentale*, L., and *Osmunda regalis*, L.,' by W. Gardiner and Tokutaro Ito; 'On Laticiferous Tissue in the Pith of *Manihot Glaziovii*, and on the Presence of Nuclei in this Tissue,' by Agnes Calvert and L. A. Boodle; 'Anomalous Thickening in the Roots of *Cycas Seemanni*, Al. Braun,' by W. H. Gregg; notes; review of Sachs's 'Physiology of Plants;' and record of current literature.

— The fifth biennial report of the Kansas State Historical Society shows the work of the society for the two years ending Jan. 18, 1887. The society was then eleven years old. The primary object of the society is that of collecting, arranging, and cataloguing a library of the materials of Kansas history, including books, pamphlets, newspapers, maps, pictures, and, in short, every thing which contains information concerning and going to illustrate the history of Kansas. Incidentally, so interwoven has been the history of Kansas with that of the whole country, and so much has it enlisted a general interest, its library has come to be the recipient, largely by gift, of not only the materials of the history, but of every thing of a literary and scientific character relating to all parts of the country. The total of the library in January last was, of bound volumes, 8,352; unbound volumes, 21,103; bound newspaper files and volumes of periodicals, 5,986; making the total of the library, 35,441. Its yearly accession of the files of local newspapers is no doubt greater than that of any other library in the country. The regular issues of all the local newspapers, daily and weekly, published in every county in Kansas, are freely given the society by the publishers, and are bound, and placed on the shelves of the library. Thus is being preserved the best of all materials of the history of every town and neighborhood in the State. The report, among other lists and tables, contains a list of the newspapers at the present time published in Kansas; viz., 72 dailies, 12 semi-weeklies, 722 weeklies, 38 monthlies, 1 semi-monthly, 1 bi-monthly, 4 quarterlies, and 2 occasionals, numbering 852 in all. The library is the property of the State, and is kept in rooms in the State Capitol.

— Among the latest issues of the Clarendon Press (Macmillan & Co.) is a batch of classical books that are worthy of careful examination. The list includes the 'Phormio' of Terence, Cicero's Catilinarian orations, 'The Knights' of Aristophanes, the 'Eclogues' of Vergil, the first book of Tacitus' 'Annals,' and, in the Elementary Classics Series, the seventh book of Cæsar's 'Commentaries.' They are all gotten up in that attractive and elegant way that characterizes the Macmillans' work. Particular attention is due, perhaps, to Dr. Merry's careful and accurate edition of the 'Knights' of Aristophanes. Both introduction and notes are extremely well done.

— A series of lectures (twenty to twenty-four in number) will be given at the Museum of Comparative Zoölogy, Cambridge, by Professor Whitney, on geographical methods and results. The course will begin on Wednesday, Nov. 9, at 3 P.M. Admission free; but tickets must be obtained of the lecturer, by application through the mail or in person; and in their distribution, since the accommodation is limited, preference will be given to teachers, for whom the course is specially intended.

— The frequently observed longevity of eminent English scientists is again shown in the high ages at which recently deceased fellows of the Royal Society have died. Of fourteen fellows, six lived to more than eighty years, and only one was under sixty at the time of his death. The average age at death of the fourteen is no less than seventy-five years.

— Oscar Harger, for eighteen years the chief assistant of Prof. O. C. Marsh, died in New Haven, Nov. 6. Mr. Harger was born at Oxford, Conn., and was graduated from Yale College in the class of '68. He was one of the high-stand members of his class, and was looked upon at graduation as a young man of exceeding great promise. When he graduated, his health had been considerably impaired in consequence of hard study and application to literary and other work, which he did in order to secure money to pay his expenses through college. In 1870 Mr. Harger became assistant

instructor in geology at Yale, and rapidly became known among literary men as a logical thinker and superior instructor. He acquired a knowledge of local botany that was considerably more extensive than was possessed by any other scientist in the city or state. Professor Marsh valued his assistant very highly, and the two geological works of which Professor Marsh is the author were given to the printers in Mr. Harger's handwriting, having been very largely prepared by him under the immediate direction of the professor. In 1878 Mr. Harger married Miss Jessie Craig, sister of James R. and Alexander Craig of New Haven. Mrs. Harger survives him, but he leaves no children.

— Mr. P. W. M. Trap of Leyden is about to issue the first number of the *Internationales Archiv für Ethnographie*, which will be edited by Dr. J. D. E. Schmelz, curator of the National Ethnographical Museum at Leyden. The principal object of the new journal is the study of 'descriptive ethnology;' i.e., of the material, form, method of manufacture, and use of objects made by peoples still extant. It will be illustrated by color-plates, a magnificent sample of which accompanies the publisher's announcement.

— In *Science* of Nov. 4, p. 226, 23d line of 'Search for Gems and Precious Stones,' '.792074' should read '.7920792.'

LETTERS TO THE EDITOR.

*** The attention of scientific men is called to the advantages of the correspondence columns of* SCIENCE *for placing promptly on record brief preliminary notices of their investigations. Twenty copies of the number containing his communication will be furnished free to any correspondent on request.*

The editor will be glad to publish any queries consonant with the character of the journal.

Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

Cheyenne.

YOUR espousal of the true pronunciation of 'Arkansaw' should give a shock to New England self-conceit, unaware that the New England type of mind is essentially shallow.

In regard to the name 'Cheyenne.' In youth I was able to speak enough Sioux to trade with the Indians. The French trappers told me that the Sioux say that the first Cheyennes they ever saw had their thighs painted red, and they (Sioux) remarked to them, *Shah-ee-aie-loo-hah*, which means, 'You have painted yourselves red.' They call the Cheyennes '*Shy-aie-lah*,' an abbreviation of the above sentence. *Shah-shah* means 'red;' and *loo-yah*, 'you have.' The change to 'Cheyenne' might easily occur in the transfer from Indian to white, and the first attempt to spell it by Frenchmen would of course be with *ch* instead of *sh*. The 'squaw-men,' trappers and hunters, do not believe it has any connection with the French word *chien*, notwithstanding the name of the Cheyennes in the intertribal sign-language is 'wolf-ears made with forefingers and thumbs at sides of head.' GEO. WILSON.

Lexington, Mo., Nov. 5.

The American Physique.

LAST spring I received a letter from an English gentleman who is interested in anthropology and biology, asking me if there were any facts to sustain the impression abroad that the white man is deteriorating in size, weight, and condition in the United States. I had no positive information of my own to give, and I could only refer my correspondent to the data of the measurement of soldiers, and to some other investigations of less importance.

It occurred to me, however, that, since by far the greater part of the men of this country are clad in ready-made clothing, the experience of the clothiers might be valuable, and that, from their figures of the average sizes of the garments prepared by them for men's use, very clear deductions could be made as to the average size of the American man.

I therefore sent a letter to two clothiers in Boston who have been long in the business, one in Chicago, one in New York, one in Baltimore, one in Detroit, one in Texas, and one in Montreal. The information received in return is to this effect.

In any given thousand garments the average of all the returns is as follows: chest-measure, 38 inches; waist, 33½ inches; length of leg inside, 32½ inches; average height ranging from 5 feet 8½ to 5 feet 9 in New England, up to 5 feet 10 for the average at the South and West. A few deductions of weight are given from which one can infer that the average man weighs between 155 and 160 pounds.

These measures cover the average of the assorted sizes of garments which are made up by the thousand. There are a few small men who buy 'youths' sizes' so called, and a few larger men who buy 'extra sizes.' The remarks made in some of these letters are interesting.

My correspondent in Chicago states, "that, so far as relates to the assertion that the race in this country deteriorates, our experience teaches us that the contrary is the case. We are now, and have for several years past been, obliged to adopt a larger scale of sizes, and many more extra sizes in width as well as length, than were required ten years ago. I find that occupation and residence have a great deal to do with the difference in sizes, the average of sizes required for the cities and large towns being much less than that required for the country. Again, different sections vary very much in those requirements. For instance, an experienced stock-clerk will pick out for South and South-western trade, coats and vests, breast-measure 35 to 40, pants always one or two sizes smaller around the belly than the length of leg inside; for Western and Northern trade, coats and vests, breast-measure 37 to 42, pants 33 to 40 around the belly, 30 to 34 length of leg inside."

My correspondent in Texas gives the average 38 inches chest, 33 to 34 inches waist, 32½ leg-measure, 5 feet 10 inches height, adding, "We find that the waist-measure has increased from an average of 32, to 33 inches during the past five years, and we think our people are becoming stouter built."

My correspondent in Baltimore had previously made the same statement; to wit, "Since the late war we have noticed that the average-sized suits for our Southern trade has increased fully one inch around the chest and waist, while there has been no apparent change in the length of pants."

I asked this firm if the change could be due to the fact that the colored people had become buyers of ready-made clothing, but have for reply that the fact that the negroes are buying more ready-made clothing now than previous to the war, accounts in only a small degree for the increase of the size, but is due almost entirely to the increased physical activity on the part of the whites. The experiences of this firm covers thirty-five years.

My correspondent in New York states that "for the last thirty years our clothing, numbering at least 750,000 garments yearly, has been exclusively sold in the Southern States. We find the average man to measure 37 inches around the chest, 32 to 33 around the waist, 33 to 34 inches length of leg inside, average height 5 feet 10 inches. The Southerner measures more in the leg than around the waist, — a peculiarity in direct contrast to the Western man, who measures more around the waist than in the leg."

My correspondent in Canada gives the following details; experience covers twenty years, about 300,000 garments a year: —

Breast-measure	36,	37,	38,	39,	40,	41,	42,	44.
Waist "	32,	33,	34,	35,	36,	37½,	39,	42.
Cut per 1,000 of above sizes	80,	160,	240,	240,	140,	60,	60,	20.
Average weight for each size	140,	150,	160,	168,	175,	180,	200,	225.

"The information about the weight I got from a custom tailor of some years' experience, and cannot, of course, vouch for its correctness."

My correspondent in Detroit says, "We notice marked peculiarities in regions where dwell people of one nationality. The Germans need large waists and short legs; the French, small waists and legs; the Yankees, small waists and long legs; the Jews, medium waists and short legs. We have found a decided demand for larger sizes than we formerly used."

This subject is foreign to my customary work. I give these statements as a matter of general interest, and perhaps some of the students who are engaged in this branch of investigation may take a hint from this method and extend it still further.

Possibly the average size for a woman could be deduced from the data of the manufacturers of knit goods. From what I know of the business of the clothiers to whom I made application, I should infer that the figures which I have submitted above would cover more than one hundred million garments; and I know of no better

method of coming at a rough-and-ready conclusion regarding the size of men, than the one which I have adopted.

This subject has interested me from the standpoint of better nutrition. It will be observed that the American man is decidedly gaining in size and weight. If this has happened during twenty years of the American frying-pan, dyspeptic bread, pale pie, and cooking in general under the supervision of cooks who were sent from the wrong place where the meat did not come from, what may be expected when the American woman learns how to cook? Cannot some one obtain data for comparison with these sizes from the statistics of military recruits and conscripts in Europe, or from the contractors for army clothing?

EDWARD ATKINSON.

Boston, Nov. 3.

The Sense of Smell.

IT is quite customary, when treating of the senses, to speak slightingly of smell and taste, as if they were of little importance in the economy of life. When the subject of training the senses is under consideration, little is ever said of training the nose, while much space is devoted to educating the eye, the ear, and the hand. It is certainly true that smell does not rank with sight and hearing, and demands less care, perhaps, for its cultivation; and yet it plays an important *rôle*, and should receive its due share of attention in any scheme of education.

The function of smell is fourfold. Like the higher senses, it belongs to the intellectual endowments. It is a part of the mind. Through it the mind is reached, roused, and quickened. The percepts and concepts gained through the sense of smell can be named, described, analyzed, compared, and classified. They may thus become the means of a good degree of intellectual life. Smell is a source of knowledge. Through it the mind discerns those qualities in things which we denominate odor. This knowledge it can obtain in no other way. A surprisingly large number of objects have their own peculiar odor. The onion, the carrot, the beet, and all other vegetables have characteristic odors; so have fruits, flowers, spices, and many gases, as well as animals, meats, etc. The knowledge of the kind, quality, and condition of things that can be obtained by the sense of smell, is very extensive. Not only the druggist, the chemist, the cook, but others likewise, make much practical use of the nose as a source of knowledge, having its own special scientific interest. But smell does a highly important work in enabling us to detect foul, hurtful odors. The nose is placed at the entrance to the mouth as a sentinel to guard it from receiving unwholesome food. It is the watch-dog of the stomach. A fourth, scarcely less important function of smell is that of giving pleasure. The nose is capable of ministering to our happiness even more, perhaps, than the touch or the taste. One with a cultivated nose has delights that another knows not.

There is even a greater need for some systematic training of the sense of smell than of the so-called higher senses. The ordinary experiences of life and the regular work of the school-room necessarily give to the eye, ear, and mind considerable exercise; while the smell is called into use much less frequently out of school, and scarcely at all in school. Besides, the words expressive of smell percepts and concepts are far less numerous and exact than corresponding words for sight and hearing; so that the training incident to the use of language is likely to be far less extensive and accurate in the case of the nose than in that of the eye, ear, and hand. Add to this the low estimate generally placed upon the sense of smell, and the popular indifference to its training, as shown in the fact, that, while we have elaborate schemes for training the eye in knowledge of form and color, we have practically none for training the nose in the performance of its proper functions, and we may challenge for this useful member the sympathy and interest due to neglected merit and overlooked modesty.

In every primary school there should be some special attention paid to the education of this sense. This should aim to secure, first, the frequent exercise of the sense until it acquires strength proportionate to its duties. It should not be overworked, nor called into undue prominence, but should receive its proper share of attention till it acquires both strength and sensitiveness. Second, the training should be such as to develop a high power of discrimination, so that the pupil can discern quickly and accurately the different odors that are presented. Third, the growth in discriminative power should be accompanied *pari passu* with language. Each distinct odor should be named, and the closest association should be created between the idea and the word, so that the one shall recall the other. The pupil should be exercised in analyzing complex odors, so as to be able to detect the presence of different substances in the same compound. He should be instructed in noxious smells, which indicate the presence of harmful substances, and should have some knowledge of the disagreeable odors, their origin, and the method of their removal.

Boys might receive a little special training as a preparation for laboratory or scientific work, and girls be instructed in view of their possible duties as cooks or housekeepers. A few very simple principles suffice for suggesting a plan of carrying this scheme into effect. The work should be begun in the primary grades. This is a period of sense-activity, when the child is being aroused to mental life through sense-perception, acquainting itself with the sense-qualities of the universe, and storing up ideas for future use. If the senses are neglected at this period, the opportunity for training them may never return. At first the work should be simple, making very light demands upon the sense. A few common fruits, flowers, and spices or gums may be used, with a view of forming a sharp discrimination, quick recognition, and accurate naming. The drill exercises should be very brief, aiming at thoroughness rather than multiplicity, and may be alternated with lessons in form, color, place, number, etc. The lessons should be graded so as to increase in difficulty, and should be so systematized as to secure the fourfold end of varied activity, knowledge, health, and pleasure. Each step forward in sense-discrimination should be accompanied with drill in oral and written language. For ordinary purposes it will be sufficient to make the child well acquainted with perhaps one hundred distinct odors, separate and in combination; and these for the most part should be of those things a knowledge of which will be of most service in daily life.

When the sense has been properly trained in childhood, and a habit of wise use established, the pupil will be able to call it into exercise on all needful occasions, and, on the basis of this general culture, can, if need be, secure a highly specialized development of the sense, meeting all the requirements of extraordinary occasions.

THOMAS J. MORGAN.

Providence, R.I., Nov. 3.

Answers.

15. IS THE TRUMPET-CREEPER POISONOUS?—The belief is general in many parts of the South and South-west that both the trumpet-creeper and the Virginia creeper (*Ampelopsis quinquefolia*) are poisonous. I have always acted upon the opinion that this belief is as unfounded in the one case as in the other. A little experience of the poisonous *Rhus* will make an ignorant person afraid of every vine found growing in the woods. JOHN C. BRANNER.

Little Rock, Ark., Oct. 31.

15. IS THE TRUMPET-CREEPER POISONOUS? — No. This is *Tecoma radicans*, and climbs trees, posts, walls, etc., by means of thousands of rootlets. It is trained around many verandas and about door-yards for ornament. No one was ever poisoned by it. It has been often mistaken for *Rhus radicans* of Linnæus (the climbing variety of *R. toxicodendron*), which also climbs by means of thousands of rootlets. The stems of the two clinging to trees resemble each other very much. I have had many cases of *Rhus*-poisoning, but never heard of any thing being poisoned by the *Tecoma*. Many times when persons have exclaimed in alarm, "That is poison-vine, don't touch it!" I have, to their consternation, seized the leaves of *Tecoma*, rubbed them over my face and hands, and even chewed them. With sixty years of daily intimacy with these plants, I feel justified in these statements. D. L. PHARES.

Agricultural College P.O., Miss., Nov. 5.

16. The Archbald pot-holes were described by Dr. John C. Branner in the Proceedings of the American Philosophical Society, vol. xxiii., pp. 353–357 (read Feb. 19, 1887), and Mr. Charles A. Ashburner in the 'Annual Report of the Pennsylvania Geological Survey for 1885,' pp. 615–626. CHARLES S. PROSSER.

Cornell Univ., Ithaca, N.Y., Nov. 7.